



# Volunteer Lake Assessment Program Individual Lake Reports

## PERKINS POND, SUNAPEE, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	704	Max. Depth (m):	3	Flushing Rate (yr <sup>-1</sup> ):	1.3
Surface Area (Ac.):	157	Mean Depth (m):	1.4	P Retention Coef:	0.83
Shore Length (m):	3,900	Volume (m <sup>3</sup> ):	877,000	Elevation (ft):	1082

### TROPHIC CLASSIFICATION

Year	Trophic class
1986	OLIGOTROPHIC
2003	MESOTROPHIC

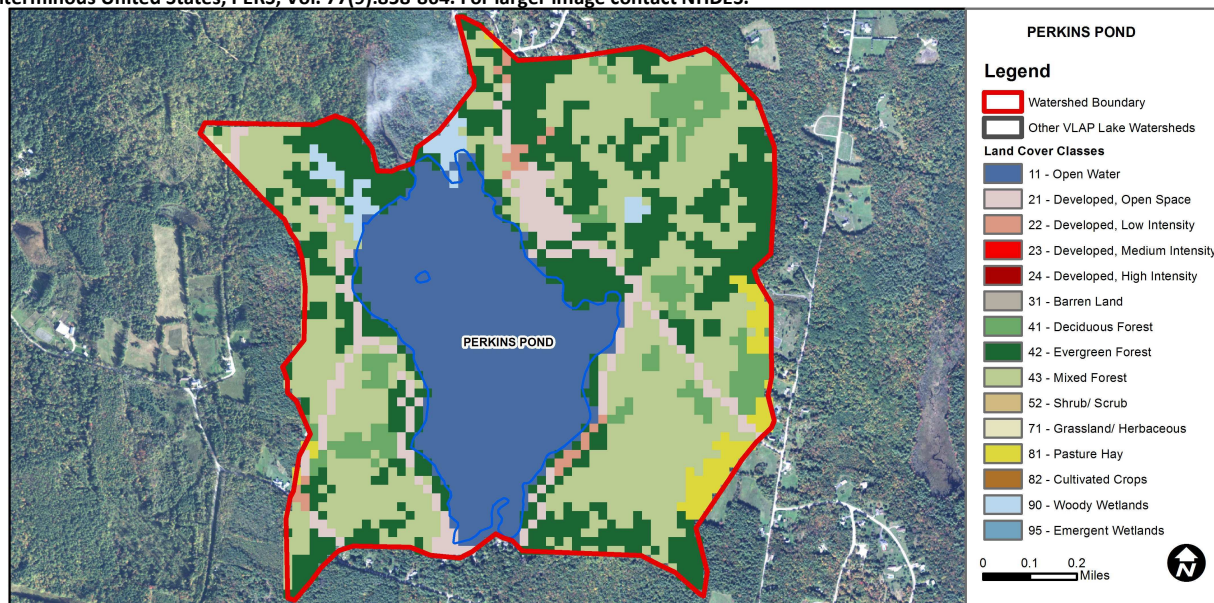
### KNOWN EXOTIC SPECIES


The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen saturation	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Bad	The calculated median is from 5 or more samples and is > 2X indicator
Primary Contact Recreation	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	24.8	Barren Land	0	Grassland/Herbaceous	0.1
Developed-Open Space	6.47	Deciduous Forest	5.65	Pasture Hay	2.53
Developed-Low Intensity	0.92	Evergreen Forest	24.64	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	33.43	Woody Wetlands	1.71
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## PERKINS POND, SUNAPEE

### 2014 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- **CHLOROPHYLL-A:** Chlorophyll levels were average in June and then increased to slightly elevated levels in July and September. The 2014 average chlorophyll level decreased from 2013 but remained greater than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (deep spot) and Inlet conductivity remained slightly greater than the state median and historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. Outlet conductivity was lower than normal in 2014 and was the lowest average conductivity since monitoring began.
- **E. COLI:** Burma Rd. E. coli levels were less than the state standard of 406 cts/100 mL for surface waters, and were less than the level measured in 2007. A significant storm event occurred prior to sampling and stormwater runoff likely contributed to the measured E. coli levels. Wildlife and domestic animal wastes are typically a localized source of E. coli in stormwater.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels decreased from June to September and average levels were less than the state median and decreased from 2013. Historical trend analysis indicates relatively stable epilimnetic phosphorus since monitoring began. Inlet phosphorus levels were elevated in July and the turbidity was also elevated following the significant storm event. Outlet phosphorus levels were elevated in July and September following significant storm events.
- **TRANSPARENCY:** Transparency was better in June when algal growth was lower, and then decreased in July and August when algal growth increased. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Epilimnetic turbidity was elevated in July during higher levels of algal growth and following a significant storm event. Inlet turbidity was elevated in July following significant storm event and organic matter was also noted in the sample. Outlet turbidity was elevated in July and September following significant storm events.
- **pH:** Epilimnetic pH levels were less than the desirable range 6.5-8.0 in June and then increased to desirable levels in July and September. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began. Inlet and Outlet pH levels were slightly less than the desirable range on each sampling event.
- **RECOMMENDED ACTIONS:** Stormwater runoff contributed to elevated turbidity and phosphorus levels as well as E. coli levels. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff in the watershed, particularly from paved, dirt and gravel roads, driveways, rooftops, and steep slopes. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for homeowners looking to reduce stormwater runoff from their properties. Contact the VLAP Coordinator if you would like copies. DES has also initiated a program called Soak Up the Rain NH designed to assist local organizations in managing stormwater runoff. Visit [www.soaknh.org](http://www.soaknh.org) for more information. Encourage local road agents and winter maintenance companies to obtain a Voluntary NH Salt Applicator Certification through the UNH Technology Transfer Center's Green SnowPro Certification program. Visit <http://www.t2.unh.edu/green-snowpro-training-and-certification> for more information and tips for homeowners to reduce salt application on their driveways and walkways. Keep up the great work!

Station Name	Table 1. 2014 Average Water Quality Data for PERKINS POND								
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	6.53	6.06	75.6		10	2.17	2.17	1.76	6.79
Burma Rd				144					
Inlet			59.5		10			1.53	6.44
Outlet			33.3		15			1.78	6.26

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** between 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

